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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,861	11/05/2001	Michael Persson	ANO 6129 P1US/3159	6497

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EXAMINER

METZMAIER, DANIEL S

ART UNIT	PAPER NUMBER
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1712

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08/08/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/007,861	Applicant(s) PERSSON ET AL.	
	Examiner Daniel S. Metzmaier	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,26-65 and 73-91 is/are pending in the application.
- 4a) Of the above claim(s) 36-42,54-60,64 and 65 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,26-35,43-53,61-63 and 73-91 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1, 26-65 and 73-91 are pending.

Election/Restrictions

2. This application contains claims 36-42, 54-60, and 64-65 drawn to an invention nonelected with traverse in Paper filed October 6, 2003.

The requirement is still deemed proper and was made FINAL in the Office Action mailed February 3, 2004. Applicants have taken no further action.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 26-35, 43-53, 61-63, and 73-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johansson et al, 5,368,833, in view of Andersson et al,

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5,603,805. Johansson et al '833 (column 2, line 45, to column 4, line 20) disclose methods of making silica sols.

Johansson et al '833 (column 2, line 52, to column 3, line 8) discloses the first step of the claimed process, (a) acidifying an aqueous silicate solution to a pH of 1 to 4. Johansson et al '833 (column 2, lines 65-66) further teaches particle growth and ripening at pH of 8-9 during the acidification process step.

Johansson et al '833 (column 3, lines 8 et seq) discloses an alkalization step (b) and (d), which is carried out to a pH between 8 and 11 and a SiO₂ to M₂O ratio of 20:1 to 75:1, preferably from about 30:1 to 60:1. Johansson et al '833 (column 3, lines 25 et seq) discloses the degree of microgel can be influenced by the salt content, adjustment of the SiO₂ dry content in the sol and when the stability minimum for the sol is passed, at a pH of about 5. Johansson et al '833 (column 3, lines 32-34) discloses: "By prolonged times at this passage the degree of microgel can be directed to the desired value."

Johansson et al '833 (column 3, lines 33 et seq) discloses the SiO₂ concentration of 7 to 4.5 and 6.8 to 5.5 and surface areas of 750 to 1000 m²/g. Johansson et al '833 (column 3, lines 66) further discloses surface stabilization of the silica sol with aluminum modification, e.g., alkali metal aluminate.

Johansson et al '833 differs from the claims in employing two alkalization steps to achieve the resulting silica sols.

Andersson et al '805 (column 2, lines 56 et seq) discloses processes similar to the Johansson et al '833 processes to produce silica sols having a low S-value, e.g., 15-

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40%, and a specific surface area of 300 to 700 m²/g, by (a) acidifying an aqueous alkali water glass solution (e.g., sodium silicate, pH ~ 13) to a pH of about 1 to about 4, (b) alkalization to a pH of 7 to 9 to a final SiO₂ to M₂O ratio of 20:1 to 75:1, preferably from about 30:1 to 60:1.

Andersson et al '805 (column 3, lines 48 et seq) teaches:

"The degree of microgel can be influenced by salt content, by adjustment of the concentration at the preparation of the acid sol and at the alkalization since in this step the degree of microgel is influenced when the stability minimum for the sol is passed, at a pH of about 5. By prolonged times at this passage the degree of microgel can be directed to the desired value."

Andersson et al '805 (column 3, lines 48 et seq) further teaches:

"Another suitable way to control the degree of microgel is by adjustment of the alkalization to a certain pH and the above given pH values to which the alkalization is carried out controls the S-values to lower values at a lower pH. To obtain sols with S-values within the range 15 to 40% the pH at the alkalization is suitably controlled to the range 7.5 to 8.5." (Emphasis added).

Andersson et al '805 (column 3, lines 67) further discloses surface stabilization of the silica sol with aluminum modification, e.g., alkali metal aluminate. Furthermore, Andersson et al '805 (column 3, lines 57 et seq) further teaches heat treating up to 95° C for about a half hour up to about 24 hours to achieve the desired degree of microgel formation and specific surface area.

These references are combinable since they teach similar processes for making silica sols having application as paper making additives. It would have been obvious to one having ordinary skill in the art at the time of applicants' invention to vary the pH to values of greater than 7, e.g., 7.5 to 8.5, taught in Andersson et al '805 for the

advantage of obtaining a desired degree of microgel formation and specific surface area for a time period and temperature suitable therefore, and to work within the pH ranges by additional alkalization of the silica sol within the pH ranges taught in the Johanssan et al '833 reference.

Merely modifying the process conditions such as temperature, concentration, and pH is not a patentable modification absent a showing of criticality for a result-effective variable, i.e., a variable that achieves a recognized result.

Response to Arguments

6. Applicant's arguments filed 01 May 2007 have been fully considered but they are not persuasive.

7. Applicants note that the summary of the claims was not properly updated on the form PTO-326 but claims 73-91 were included in the rejections. The examiner regrets the inadvertent inconsistency and notes claims 73-91 were clearly considered and rejected although not summarized.

8. Applicants (pages 13 and 14) assert the Johanssan et al '833 and Andersson et al '805 references are not properly combinable and characterize the references as having similar and related processes with a number of steps having overlapping pH ranges. Applicants further assert the references lack some suggestion or motivation to combine and/or modify the references. The recent KSR decision forecloses the argument that a specific teaching, suggestion, or motivation is required to support a finding of obviousness. Please see the Board of Appeals decision *Ex parte Smith*,

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USPQ2d, slip *op* at 20, (Bd. Pat. App. & Interf. June 25, 2007) (citing *KSR*, 82 USPQ2d at 1396).

Applicants further assert the one having ordinary skill in the art must have a reasonable expectation of success when making the modification to the prior art. There is clearly a reasonable expectation of success in making “an aqueous sol containing silica-based particles” (see instant claim 1) by the methods claimed as both methods of the Johansson et al ‘833 and Andersson et al ‘805 references make silica sols.

Applicants further assert the teaching or suggestion to modify the prior art must have a reasonable expectation of success. Applicants’ claims are directed to methods of making silica sols. The modification of the prior art is the alkalization steps, which are known in the art to be performed as well as performed in multiple steps. Furthermore, those skilled in the silica sol art clearly recognize pH as a result effecting parameter. Those skilled in the chemical arts in general as well as the silica sol art recognize the establishment of equilibrium of a chemical system may require time to reach equilibrium and may not occur instantaneously. There exist a reasonable expectation of success that performing the Johansson et al ‘833 process and an alkalization step in multiple additions as characterized in the Andersson et al ‘805 reference rather than a single addition of a base.

The examiner has met their initial burden and the variation of the pH of the process of making silica is clearly common practice in the silica sol art.

Applicants assert the Andersson et al ‘805 reference does not teach two alkalizing steps and does not teach alkalizing to greater than a pH of 10. This has not

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been deemed persuasive since the Andersson et al '805 reference (column 3, lines 48 et seq) teaches:

“Another suitable way to control the degree of microgel is by adjustment of the alkalization to a certain pH and the above given pH values to which the alkalization is carried out controls the S-values to lower values at a lower pH. To obtain sols with S-values within the range 15 to 40% the pH at the alkalization is suitably controlled to the range 7.5 to 8.5.” (Emphasis added).

Clearly the pH is a result effective parameter to modify the S-values and degree of microgel. Common forms of alkalization are the addition of base and the control thereof is controlled by the addition(s) of base to the sol.

Furthermore, the Andersson et al '805 reference teaches alkalization to greater than a pH of 7 and the sols (column 4, lines ~ 26-30) have good effect in the pH range of 4-10 in papermaking. The Johansson et al '833 reference further teaches the sols (column 4, lines ~ 39-42) have good effect in the pH range of 4-10 and (column 6 lines 14-15) may be utilized in the pH range of about 4 to about 10. A pH of at least 10 is clearly contemplated by both references.

9. In response to applicant's argument (page 15) that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA

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1971). The Andersson et al '805 reference clearly (column 3, lines 48 et seq) teaches: "To obtain sols with S-values within the range 15 to 40% the pH at the alkalization is suitably controlled to the range 7.5 to 8.5." This is clear motivation and suggestion for making a two-step alkalization to suitably control the pH to the range of 7.5 to 8.5 for the advantage of modifying the S-values of the sols.

10. Applicants arguments (page 15) regarding the growth step in the references to achieve a specific surface area have not been deemed persuasive since the independent claim is silent regarding any resulting sol properties and as evidenced in claim 29 the surface area is open ended having a range of at least 90 m²/gm and claim 53 of at least 550 m²/gm.

The Johansson et al '833 and Andersson et al '805 references disclose (column 3, lines 65-66; abstract, respectively) disclose sols having a surface areas of 750 to 1000 m²/gm and 300 to 700 m²/gm, respectively. Applicants claimed do not exclude the growth step and specifically result in materials that appear to have the same surface area.

11. Applicants (page 16) assert the exemplified sols show the sols that have S-values and surface areas reading on those of the Andersson et al '805 reference perform inferior to the instant examples. This has not been deemed persuasive because applicants have not shown that said results were a result of the process and the claims are not commensurate in scope with applicants' showing and alleged unexpected results.

The results have further not been shown to be unexpected. The difference in drainage has not been shown to necessarily result from the claimed process. The claims read on methods and materials that are not commensurate with applicants' showing.

12. In summary, the above rejections are deemed proper and have been maintained.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Metzmaier whose telephone number is (571) 272-1089. The examiner can normally be reached on 9:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on (571) 272-1302. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel S. Metzmaier
Primary Examiner
Art Unit 1712

DSM